NETWORK ADMINISTRATION

ACADEMIC		
AA		**SPEAKING AND LISTENING**
AA	1	Utilizes effective verbal and non-verbal communication skills
AA	2	Participates in conversation, discussion, and group presentations
AA	3	Communicates and follows directions and procedures
AA	4	Communicates effectively with customers and co-workers
AB		**READING AND WRITING**
AB	1	Locates and interprets written information
AB	2	Reads and interprets workplace documents
AB	3	Identifies relevant details, facts, and specifications
AB	4	Records information accurately and completely
AB	5	Demonstrates competence in organizing, writing and editing using correct vocabulary, spelling, grammar, and punctuation
AB	6	Demonstrates the ability to write clearly and concisely using industry specific terminology
AC		**CRITICAL THINKING AND PROBLEM SOLVING**
AC	1	Utilizes critical-thinking skills to determine best options/outcomes (e.g., analyze reliable/unreliable sources of information, use previous experiences, implement crisis management, and develop contingency planning)
AC	2	Utilizes innovation and problem-solving skills to arrive at the best solution for current situation
AC	3	Implements effective decision-making skills
AD		**MATHEMATICS**
AD	1	Performs basic and higher level math operations (e.g., addition, subtraction, multiplication, division, decimals, fractions, units of conversion, averaging, percentage, proportion, and ratios)
AD	2	Solves problems using measurement skills (e.g., distance, weight, area, and volume)
AD	3	Makes reasonable estimates
AD	4	Uses tables, graphs, diagrams, and charts to obtain or convey information
AD	5	Uses deductive reasoning and problem-solving in mathematics
AE		**FINANCIAL LITERACY**
AE	1	Locates, evaluates, and applies personal financial information
AE	2	Identifies the components of a budget and how one is created
AE	3	Sets personal financial goals and develops a plan for achieving them
AE	4	Uses financial services effectively
AE	5	Demonstrates ability to meet financial obligations
AF		**INTERNET USE AND SECURITY**
AF	1	Recognizes the potential risks associated with Internet use
AF	2	Identifies and applies Internet security practices (e.g., password security, login, logout, log off, and lock computer)
AF	3	Practices safe, legal, and responsible use of technology in the workplace
AG		**INFORMATION TECHNOLOGY**
AG	1	Uses technology appropriately to enhance professional presentations
AG	2	Demonstrates effective and appropriate use of social media
AG	3	Identifies ways social media can be used as marketing, advertising, and data gathering tools
AH		**TELECOMMUNICATIONS**
AH	1	Selects and uses appropriate devices, services, and applications to complete workplace tasks
AH	2	Demonstrates appropriate etiquette when using e-communications (e.g., cell phone, e-mail, personal digital assistants, online meetings, and conference calls)
EMPLOYABILITY		
EA		**POSITIVE WORK ETHIC**
EA	1	Demonstrates enthusiasm and confidence about work and learning new tasks
EA	2	Demonstrates consistent and punctual attendance
EA	3	Demonstrates initiative in assuming tasks
EA	4	Exhibits dependability in the workplace
EA	5	Takes and provides direction in the workplace
EA	6	Accepts responsibility for personal decisions and actions
EB		**INTEGRITY**
EB	1	Abides by workplace policies and procedures
EB	2	Demonstrates honesty and reliability
EB	3	Demonstrates ethical characteristics and behaviors
EB	4	Maintains confidentiality and integrity of sensitive company information
EB	5	Demonstrates loyalty to the company
EC		**SELF-REPRESENTATION**

EC	1	Demonstrates appropriate dress and hygiene in the workplace
EC	2	Uses language and manners suitable for the workplace
EC	3	Demonstrates polite and respectful behavior toward others
EC	4	Demonstrates personal accountability in the workplace
EC	5	Demonstrates pride in work
ED		**TIME, TASK, AND RESOURCE MANAGEMENT**
ED	1	Plans and follows a work schedule
ED	2	Works with minimal supervision
ED	3	Works within budgetary constraints
ED	4	Demonstrates ability to stay on task to produce high quality deliverables on time
EE		**DIVERSITY AWARENESS**
EE	1	Recognizes diversity, discrimination, harassment, and equity
EE	2	Works well with all customers and co-workers
EE	3	Explains the benefits of diversity within the workplace
EE	4	Explains the importance of respect for feelings, values, and beliefs of others
EE	5	Identifies strategies to bridge cultural/generational differences and use differing perspectives to increase overall quality of work
EE	6	Illustrates techniques for eliminating gender bias and stereotyping in the workplace
EE	7	Identifies ways tasks can be structured to accommodate the diverse needs of workers
EE	8	Recognizes the challenges and advantages of a global workforce
EF		**TEAMWORK**
EF	1	Recognizes the characteristics of a team environment and conventional workplace
EF	2	Contributes to the success of the team
EF	3	Demonstrates effective team skills and evaluates their importance in the workplace (e.g., setting goals, listening, following directions, questioning, and dividing work)
EG		**CREATIVITY AND RESOURCEFULNESS**
EG	1	Contributes new ideas
EG	2	Stimulates ideas by posing questions
EG	3	Values varying ideas and opinions
EG	4	Locates and verifies information
EH		**CONFLICT RESOLUTION**
EH	1	Identifies conflict resolution skills to enhance productivity and improve workplace relationships
EH	2	Implements conflict resolution strategies and problem-solving skills
EH	3	Explains the use of documentation and its role as a component of conflict resolution
EI		**CUSTOMER/CLIENT SERVICE**
EI	1	Recognizes the importance of and demonstrates how to properly acknowledge customers/clients
EI	2	Identifies and addresses needs of customers/clients
EI	3	Provides helpful, courteous, and knowledgeable service
EI	4	Identifies appropriate channels of communication with customers/clients (e.g., phone call, face-to-face, e-mail, and website)
EI	5	Identifies techniques to seek and use customer/client feedback to improve company services
EI	6	Recognizes the relationship between customer/client satisfaction and company success
EJ		**ORGANIZATIONS, SYSTEMS, AND CLIMATES**
EJ	1	Defines profit and evaluates the cost of conducting business
EJ	2	Identifies "big picture" issues in conducting business
EJ	3	Identifies role in fulfilling the mission of the workplace
EJ	4	Identifies the rights of workers (e.g., adult and child labor laws and other equal employment opportunity laws)
EJ	5	Recognizes the chain of command, organizational flow chart system, and hierarchy of management within an organization
EK		**JOB ACQUISITION AND ADVANCEMENT**
EK	1	Recognizes the importance of maintaining a job and pursuing a career
EK	2	Defines jobs associated with a specific career path or profession
EK	3	Identifies and seeks various job opportunities (e.g., volunteerism, internships, co-op, and part-time and full-time employment)
EK	4	Prepares a resume, letter of application, and job application
EK	5	Prepares for a job interview (e.g., research company, highlight personal strengths, prepare questions, set-up a mock interview, and dress appropriately)
EK	6	Participates in a job interview
EK	7	Explains the proper procedure for leaving a job
EL		**LIFELONG LEARNING**
EL	1	Acquires current and emerging industry-related information

EL	2	Demonstrates commitment to learning as a life-long process and recognizes learning opportunities
EL	3	Seeks and capitalizes on self-improvement opportunities
EL	4	Discusses the importance of flexible career planning and career self-management
EL	5	Employs leadership skills to achieve workplace objectives (e.g., personal vision, adaptability, change, and shared vision)
EL	6	Recognizes the importance of job performance evaluation and coaching as it relates to career advancement
EL	7	Accepts and provides constructive criticism
EL	8	Describes the impact of the global economy on jobs and careers
EM		**JOB SPECIFIC TECHNOLOGIES**
EM	1	Identifies the value of new technologies and their impact on driving continuous change and the need for life-long learning
EM	2	Researches and identifies emerging technologies for specific careers
EM	3	Selects appropriate technological resources to accomplish work
EN		**HEALTH AND SAFETY**
EN	1	Assumes responsibility for safety of self and others
EN	2	Follows safety guidelines in the workplace
EN	3	Manages personal health and wellness
OCCUPATIONAL		
OA		**COMPUTER LITERACY**
OA	1	Demonstrate proficiency in a word processing package
OA	2	Demonstrate proficiency in a spreadsheet package
OA	3	Describe common applications of a database
OA	4	Demonstrate proficiency in a presentation package
OA	5	Send and receive electronic mail
OA	6	Print in landscape and portrait orientations
OA	7	Apply Internet etiquette and safety
OA	8	Explain the differences between a Web browser and a search engine
OA	9	Navigate a World Wide Web browser
OA	10	Identify Internet search engines and their advantages and disadvantages
OA	11	Demonstrate proficiency in the use of the Internet
OA	12	Identify what an operating system is, how it works, and be able to solve common problems
OA	13	Manipulate (e.g., create, copy, cut, paste, move, rename, delete) files and folders to manage and maintain data
OA	14	Discriminate between ethical and unethical uses of computers and information
OA	15	Demonstrate an understanding of copyrights and licensing
OA	16	Demonstrate an awareness of computer security and a basic understanding of ways to protect a computer (e.g., viruses, Trojans, Malware)
OA	17	Explain the impact of computers on society
OA	18	Identify types of computers, platforms, and devices explaining how they process information and how individual computers interact with other computing systems and devices
OA	19	Identify the function of computer hardware components
OA	20	Identify how to maintain computer equipment and solve common problems relating to computer hardware
OA	21	Identify how software and hardware work together to perform computing tasks and how software is developed and upgraded
OA	22	Identify different types of software, general concepts relating to software categories, and the tasks to which each type of software is most suited or not suited
OA	23	Demonstrate the safe and responsible use of resources, office equipment, and machines
OB		**INFORMATION TECHNOLOGY PROJECT MANAGEMENT**
OB	1	Determine client needs
OB	2	Determine the purpose and goals of the project
OB	3	Identify target audience
OB	4	Identify stakeholders and decision makers
OB	5	Define scope of work to meet client requirements
OB	6	Evaluate project requirements
OB	7	Estimate time requirements
OB	8	Create a project plan
OB	9	Estimate project pricing
OB	10	Demonstrate knowledge of project budgeting, scheduling, and control issues related to development and support
OB	11	Identify tools and resources for the job
OB	12	Identify critical milestones

OB	13	Report project status
OB	14	Identify software packages (e.g., MS Project, FreeWare, Shareware)
OC		**COMPUTER MAINTENANCE ESSENTIALS**
OC	1	Identify the names, purpose, and characteristics of computer systems and peripheral devices (e.g., motherboards, expansion/adapter cards, processors, cooling systems, memory, storage devices, power supplies, input devices, cables, output devices)
OC	2	Identify the steps to install, configure, optimize, and upgrade personal computer components and peripherals (e.g., internal/external storage devices, display devices, basic input devices, multimedia devices)
OC	3	Identify software tools, diagnostic procedures, and troubleshooting techniques for personal computer systems
OC	4	Identify techniques to perform preventative maintenance on personal computer components
OC	5	Identify the steps to install, configure, upgrade, and support laptops/ portable devices and identify the names, purposes, and characteristics of mobile computer systems
OC	6	Identify the steps to install, configure, optimize, and upgrade the current client operating systems
OC	7	Identify locations, purposes, and characteristics of operating system files
OC	8	Create, view, and manage disks, directories, and files in operating systems
OC	9	Identify tools, diagnostic procedures, and troubleshooting techniques for operating systems
OC	10	Identify the names, purposes, and methods of connection for printer and scanner components and the use of network print services
OC	11	Describe how to install, configure, optimize, troubleshoot, and upgrade printers and scanners
OC	12	Describe basic physical networking connectivity concepts (e.g., cables, connectors, connection types, network devices)
OC	13	Install, configure, and troubleshoot network interfaces and manage wired/wireless connections
OC	14	Recognize the fundamental principles of information technology security (e.g., Desktop, Network, personal devices, VPN)
OC	15	Identify basic network components (e.g., server, switch, router, access point)
OC	16	Identify the fundamental principles of security including smart cards, authentication technologies, malicious software protection, firewalls, file system security, wireless network security, data, and physical security
OC	17	Identify potential safety hazards and take preventative action including proper disposal (e.g., disposal procedures of batteries, display devices, chemical solvents and cans)
OC	18	Convert among decimal, binary, and hexadecimal number systems
OC	19	Access needed information using company and manufacturers' references (e.g., procedural manuals, documentation, standards, work flowcharts, firmware updates, drivers, manufacturers' websites)
OD		**ADVANCED COMPUTER MAINTENANCE**
OD	1	Access needed information using company and manufacturer' references (e.g., procedural manuals, documentation, standards, work flowcharts, firmware updates, drivers, manufacturers' websites)
OD	2	Isolate and identify computer problems using visual/audible inspection of components and follow appropriate troubleshooting procedures (e.g., status lights, beep codes, visual inspection of circuitry)
OD	3	Explain appropriate usage for mobile specific communications
OD	4	Identify major components of the LCD in portable devices (e.g., inverter, screen, backlight)
OD	5	Identify the steps to use appropriate tools, diagnostic procedures, and troubleshooting techniques to diagnose power conditions, video, keyboard, pointer, and network connectivity issues in portable devices (e.g. multimeters, anti-static devices, loopback plugs, specialty tools, cleaning products, cable testers)
OD	6	Use command line functions and utilities, including proper syntax, to manage and troubleshoot operating systems (e.g., msconfig, regedit, chkdsk)
OD	7	Locate and use appropriate operating system utilities for troubleshooting and maintenance (e.g., system, disk management tools)
OD	8	Demonstrate ability to recover operating systems
OD	9	Identify and implement basic network components (e.g., server, switch, router, access point)
OD	10	Identify names, purposes, and characteristics of basic IP networks and terminologies (e.g. port identification, usage)
OD	11	Identify the steps to establish network connectivity, wired, and wirelessly for end users, install and configure browsers, create and manage network shares
OD	12	Use command line tools to diagnose and troubleshoot network connection issues
OD	13	Define and explain how to troubleshoot software and data security issues including software firewall issues, wireless client configuration, data/user access, and file system security
OD	14	Define fault tolerance, disaster recovery, and various backup types/backup media (e.g. RAID levels)
OE		**OPERATING SYSTEM SUPPORT**
OE	1	Compare and contrast an attended and unattended installation of an operating system
OE	2	Identify the steps to perform post installation configuration (e.g., user configuration, apply service packs)
OE	3	Answer end user questions related to upgrading from a previous version of an operating system
OE	4	Identify and troubleshoot system startup and user logon problems
OE	5	Identify the steps to monitor and analyze system performance

OE	6	Identify the steps to configure and troubleshoot power management
OE	7	Identify the steps to configure support for multiple languages or multiple locations
OE	8	Identify the steps to configure and troubleshoot remote connections
OE	9	Identify the steps to configure and troubleshoot end user systems using remote access
OE	10	Identify and describe how and when to use hard drive imaging as a repair tool
OF		**SMALL NETWORK SUPPORT**
OF	1	Plan and install a home or small business network and connect it to the Internet
OF	2	Verify and troubleshoot network and Internet connectivity
OF	3	Share resources such as files and printers among multiple computers
OF	4	Recognize threats to a home network and identify ways to implement security protocols
OF	5	Configure static and/or dynamic IP services through a GUI
OG		**APPLICATIONS SUPPORT**
OG	1	Explain troubleshooting guidelines and tools to support users running applications
OG	2	Explain the importance of system architecture as it relates to troubleshooting applications
OG	3	Troubleshoot application installation and compatibility issues
OG	4	Answer end user questions related to configuring and customizing productivity applications
OG	5	Identify the steps to configure email programs and to access email servers
OG	6	Troubleshoot issues related to personal information management
OG	7	Identify the steps to backup client email
OG	8	Identify the steps to configure and troubleshoot application access on a network
OH		**GREEN INFORMATION TECHNOLOGY**
OH	1	Explain ways to save energy in the server room
OH	2	Explain ways to make the work space more energy efficient
OH	3	Identify benefits of working in a non-traditional work environment
OI		**NETWORKING FUNDAMENTALS**
OI	1	Set up a personal computer on a network to include the operating system, interface cards, and peripheral devices
OI	2	Explain the role and importance of communications and communication protocols in data networks and the Internet in business and everyday activities
OI	3	Recognize and employ basic network infrastructure devices and media (e.g. MDF and IDF)
OI	4	Describe and design addressing and naming schemes at various layers of data networks
OI	5	Describe and compare the protocols, services, and functions provided in the OSI and TCP/IP models and describe how each layer operates in various networks (encapsulation)
OI	6	Explain fundamental Ethernet concepts such as media, services, and operation
OI	7	Utilize common network utilities to verify small network operations and analyze data traffic
OI	8	Demonstrate understanding of basic network structure and physical/logical topologies
OI	9	Describe the characteristics of networking media types and connectors
OI	10	Identify the basic attributes, purposes, and functions of network components including wireless technologies
OI	11	Differentiate between network protocols in terms of routing, addressing schemes, interoperability, and naming conventions
OI	12	Identify the components and structure of IP (Internet Protocol) addressing and the required settings for connections across the Internet including classful address ranges, public/private addressing, and subnet masks
OI	13	Identify the well-known ports associated with commonly used services and protocols
OI	14	Identify the basic characteristics of WAN and remote access technologies
OI	15	Identify common security and authentication protocols
OI	16	Identify basic capabilities of the major network server operating systems
OI	17	Define the basic purposes and capabilities of firewalls, proxy servers, VLANs, extranets, and intranets
OI	18	Define and demonstrate fault tolerance, disaster recovery, and various back-up types/backup media (e.g. data centers and SANS)
OI	19	Identify good practices to ensure network security including antivirus software an authentication mechanisms
OI	20	Use the appropriate TCP/IP utilities to test, validate, and troubleshoot IP connectivity (e.g. Ping, tracenet, IP config, MBstat, Netstat)
OI	21	Use a systematic approach to diagnose a network problem, develop a recommended course of action, and document the solution
OJ		**ROUTING PROTOCOLS AND CONCEPTS**
OJ	1	Describe and explain how the router discovers and selects a path taken by packets through the network
OJ	2	Describe and explain the purpose, nature, and operations of a router
OJ	3	Configure and verify basic operations for a newly installed router to include static and default routing, and distance-vector routing protocols
OJ	4	Describe the basic features and concepts of link-state routing protocols
OJ	5	Identify and troubleshoot errors that occur in small routed networks

OK		**SMALL TO MEDIUM BUSINESS OR ISP NETWORKING**
OK	1	Describe the structure of the Internet and how Internet communications occur between host
OK	2	Identify basic WAN connectivity to telecommunications services (e.g. ISDN, POP, TI)
OK	3	Monitor network performance, isolate and repair failures
OK	4	Troubleshoot problems using an organized layered procedure
OL		**LAN SWITCHING AND WIRELESS**
OL	1	Identify and correct common network problems at OSI layers 1, 2, 3, and 7 using a layered model approach
OL	2	Interpret network diagrams including selection of appropriate infrastructure materials
OL	3	Explain the technology and media access control method for Ethernet networks
OL	4	Use the command line interface and utilities to troubleshoot common errors that occur in switched networks
OL	5	Describe standards associated with wireless media, such as IEEE WI-FI Alliance, ITU/FCC, A, B, G, N standards
OL	6	Identify and describe the purpose and configuration of the components in a small wireless network, such as Service Set Identification (SSID), Basic Service Set (BSS), Extended Service Set (ESS), and Wireless Adapter Models
OL	7	Compare and contrast Wi-Fi Protected Access (WPA) security features and capabilities of open, Wired Equivalent Privacy (WEP), and WPA-1/2 networks
OM		**INDUSTRY CERTIFICATION**
OM	1	Describe the process and requirements for obtaining industry certification related to networking
OM	2	Demonstrate the ability to successfully complete selected practice examinations and practice questions similar to those on certification exams
OM	3	Identify testing skills/strategies for taking a certification examination
ON		**CAREER PATHWAYS IN NETWORKING**
ON	1	Identify careers in the networking field
ON	2	Search the Internet and other sources for job opportunities
ON	3	Assemble a professional portfolio that contains representative samples of student's work
ON	4	Deliver an oral presentation relating to the professional portfolio
ON	5	Identify potential employment barriers for nontraditional groups and ways to overcome the barriers